10-13-00

A

LIMBACH & LIMBACH L.L.P.
2001 Ferry Building, San Francisco, CA 94111
415/433-4150

Address to:
Box Patent Application
Commissioner for Patents
Washington, D.C. 20231

Attorney's Docket No. SONY-U0266

First Named Inventor SHOEI KOBAYASHI

UTILITY PATENT APPLICATION TRANSMITTAL
(under 37 CFR 1.53(b))

SIR:

Transmitted herewith for filing is the patent application entitled:
RECORDING/REPRODUCING APPARATUS AND RECORDING/REPRODUCING METHOD

CERTIFICATION UNDER 37 CFR § 1.10

I hereby certify that this New Application and the documents referred to as enclosed herein are being deposited with the United States Postal Service on this date October 12, 2000, in an envelope bearing "Express Mail Post Office To Addressee" Mailing Label Number EL254113540US addressed to: Box Patent Application, Commissioner for Patents, Washington, D.C. 20231.

Susan Ozanne
(Name of person mailing paper)

Susan Ozanne
(Signature)

Enclosed are:

1. X Transmittal Form (two copies required)

2. The papers required for filing date under CFR § 1.53(b):
   i. 15 Pages of specification (including claims and abstract);
   ii. 9 Sheets of drawings.
   __ formal x informal

3. Declaration or oath

   a. x Unsigned - Combined with Power of Attorney

ACCOMPANYING APPLICATION PARTS

4. __ An assignment of the invention to Sony Corporation is attached (including Form PTO-1595).

   i. __ 37 CFR 3.73(b) Statement (when there is an assignee)

5. x Power of Attorney - Unsigned - Combined with Declaration

6. __ An Information Disclosure Statement (IDS) is enclosed, including a PTO-1449 and copies of __ references.

7. __ Preliminary Amendment.

8. X Return Receipt Postcard (MPEP 503 -- should be specifically itemized)

9. FOREIGN PRIORITY
   [x] Priority of application no. P11-298301 filed on October 20, 1999 in Japan is claimed under 35 USC 119.

   The certified copy of the priority application:
   x is filed herewith; or
   _ has been filed in prior application no. _ filed on _, or
   _ will be provided.

   __ English Translation Document (if applicable)

10. **FEE CALCULATION**

a. __ Amendment changing number of claims or deleting multiple dependencies is enclosed.

CLAIMS AS FILED

	Number Filed	Number Extra	Rate	Basic Fee ($710)
Total Claims	6 - 20	* 0	x $18.00	0
Independent Claims	2 - 3	* 0	x $80.00	0
__ Multiple dependent claim(s), if any			$270.00	0

*If less than zero, enter "0".

Filing Fee Calculation $710.00

50% Filing Fee Reduction (if applicable) . . . . . $

11. Small Entity Status
   a. __ A small entity statement is enclosed.
   b. __ A small entity statement was filed in the prior nonprovisional application and such status is still proper and desired.
   c. __ is no longer claimed.

12. Other Fees
   __ Recording Assignment [$40.00] $0
   __ Other fees
   Specify _____ $0

Total Fees Enclosed $710.00

13. Payment of Fees
   _x_ Check(s) in the amount of $ 710.00 enclosed.
   __ Charge Account No. 12-1420 in the amount of $__.
   A duplicate of this transmittal is attached.

14. All correspondence regarding this application should be forwarded to the undersigned attorney:

Charles P. Sammut
Limbach & Limbach L.L.P.
2001 Ferry Building
San Francisco, CA 94111
Telephone: 415/433-4150
Facsimile: 415/433-8716

15. Authorization to Charge Additional Fees

_X_ The Commissioner is hereby authorized to charge any additional fees (or credit any overpayment) associated with this communication and which may be required under 37 CFR § 1.16 or § 1.17 to Account No. 12-1420. **A duplicate of this transmittal is attached**.

LIMBACH & LIMBACH L.L.P.

October 12, 2000
(Date)

By: _____
Charles P. Sammut
Registration No. 28,901
Attorney(s) or Agent(s) for Applicant(s)

Attorney Docket No. SONY-U0266
[S00P1266US00]

TITLE OF THE INVENTION

Recording/Reproducing Apparatus and Recording/Reproducing Method

BACKGROUND OF THE INVENTION

The present invention relates to a recording/reproducing apparatus and a recording/reproducing method, both designed to record and reproduce data on and from a disk-shaped recording medium that has an address data area having emboss pits and a recording/reproducing area having a wobbling spiral groove.

There is known a method of recording address data on an optical disk, in which pits are made in the process of forming the disk, thereby recording the address data. For example, the recording surface of the disk is divided into blocks called "sectors," each for storing 2048 (2k) bytes of user data. Header data is recorded, in the form of pits, in the header area of each sector and is used as sector address. A recording/reproducing apparatus first reads the sector address. If the sector address pertains to a desired sector, the apparatus either records data on or reproduces data from the recording/reproducing area that follows the header area.

An optical disk is known, which has a spiral groove made in its surface and wobbling at a specific frequency. A recording/reproducing apparatus reads a wobble signal from the optical disk and reproduces synchronization data from the wobble signal. The amount of the synchronization data is measured in the recording/reproducing apparatus, thereby interpolating the address position, even if the disk has defects, destroying the address data. The apparatus can therefore achieve

continuous data-recording. In addition, the frequency of the wobble signal can be used to control the rotation speed of the spindle motor incorporated in the recording/reproducing apparatus.

As described above, the recording/reproducing apparatus generates the synchronization data from the wobble signal and uses the frequency of the wobble signal to control the rotation speed of the spindle motor. The wobble signal must therefore be detected with high precision. It is difficult, however, to detect the wobble signal when a complex operation is performed as the operating mode is switched from the recording mode to the reproducing mode.

The wobble signal may become discontinuous or distorted when a track jump occurs, when the operating mode is switched from the reproducing mode to the recording mode, or when the head crosses the address data area. If this happens, the high-precision synchronization data cannot be generated from the wobble signal.

BRIEF SUMMARY OF THE INVENTION

The present invention has been made in view of the foregoing. The object of the present invention is to provide a recording/reproducing apparatus and a recording/reproducing method, both capable of remove any signal generated when the wobble signal is either discontinuous or distorted, while the data is being recorded on or reproduced from a disk-shaped recording medium.

To achieve this object, a recording/reproducing apparatus according to the invention is designed to record and reproduce data on and from a disk-shaped

recording medium that has an address data area having emboss pits and a recording/reproducing area having a wobbling spiral groove. The apparatus comprises: head means for reading address data from the address data area and writing and reading a signal in and from the recording/reproducing area; and wobble-signal processing means for extracting a wobble signal from the signal the head means has read from the recording/reproducing area, and for holding a PLL circuit designed to reproduce a sync signal from the wobble signal, while no normal wobble signal is obtained.

To attain the object mentioned above, a recording/reproducing method according to this invention is designed to record and reproduce data on and from a disk-shaped recording medium that has an address data area having emboss pits and a recording/reproducing area having a wobbling spiral groove. The method comprises the steps of: extracting a wobble signal from a signal head means has read from the recording/reproducing area; and holding a PLL circuit designed to reproduce a sync signal from the wobble signal, while no normal wobble signal is obtained.

With the present invention it is possible to remove any signal generated when the wobble signal is either discontinuous or distorted, thereby obtaining a synchronization signal of high precision.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1 is a block diagram illustrating an apparatus for recording and reproducing data on and from an optical disk, which is an embodiment of the present

invention:

FIG. 2 is a diagram illustrating an optical disk on and from which the recording/reproducing apparatus records and reproduces data;

FIG. 3 is a diagram depicting the address data area and recording/ reproducing area of the optical disk;

FIG. 4 is a block diagram showing the wobble circuit incorporated in the recording/reproducing apparatus;

FIG. 5 is a timing chart illustrating how a wobble signal is generated during the data-recording and how a synchronization signal is generated from the wobble signal;

FIG. 6 is a timing chart explaining how a wobble signal is generated during the track jump and how a synchronization signal is generated from this wobble signal;

FIG. 7 is a timing chart showing how a wobble signal is generated from the address data area and how a synchronization signal is generated from the wobble signal;

FIG. 8 is a block diagram illustrating another type of a wobble circuit that generates a synchronization signal from a wobble signal; and

FIG. 9 is a timing chart explaining how the wobble circuit of FIG. 8 generates a wobble signal and how a synchronization signal is generated from the wobble signal generated by the wobble circuit.

DETAILED DESCRIPTION OF THE INVENTION

An embodiment of the present invention will be described, with reference to the

accompanying drawings.

The embodiment is an optical disk apparatus for recording and reproducing data on and from an optical disk that has an address data area having embossed pits and a recording/reproducing area having a wobbling spiral groove.

FIG. 1 shows the optical disk apparatus. The optical disk apparatus comprises an optical head (OP head) 11, a wobble circuit 12, a system controller (syscon) 13, and an address-decoding timing generator (Address DEC TG) 14. The OP head 11 applies a laser beam to an optical disk 10 to read and write data on and from the optical disk 10. The wobble circuit 12 obtains a wobble signal from the read signal supplied from the OP head 11 and generates a sync signal. The address-decoding timing generator (Address DEC TG) 14 receives a reproduced signal from the optical head 11 and decodes the address of the reproduced signal, thereby generating address data. The address data is supplied to the system controller 13. The generator 14 receives the sync signal from the wobble circuit 12 and generates a timing signal from the sync signal. The sync signal is supplied to some other components via the system controller 13.

The optical disk apparatus further comprises a read/write (RW) circuit 15, a modem circuit 16, an ECC encoder/decoder 17, a servo circuit 18, a spindle motor 19, and a spindle circuit 20. The read/write (RW) circuit 15 performs recording compensation to record data on the disk 10 and reproduce binary data by means of a phase-locked loop (PLL) and the like to reproduce data from the disk 10. The modem

circuit 16 modulates the data to be recorded on the optical disk 10 and demodulates data reproduced from the optical disk 10. The ECC encoder/decoder 17 encodes (ENC) and decodes (DEC) an error correcting code (ECC). The servo circuit 18 performs the seek operation of the OP head 11 and effects servo control on the two-axis actuator incorporated in the OP head 11. The spindle circuit 20 controls the spindle motor 19. Note that the system controller 13 controls any other component, either directly or indirectly.

The OP head 11 is composed of an optical system, a reproduction IV amplifier, a two-axis actuator and the like. The optical system includes a laser diode LD.

The optical disk 10 on and from which the optical disk apparatus reads and writes data will be described, with reference to FIGS. 2 and 3.

As FIG. 2 shows, the optical disk 10 has a number of concentric tracks. Each track consists of eight segments Sg_0 to Sg_7. As shown in FIG. 3, each segment Sg_i is composed of an address area Ad_{ai} and a read/write area RW_{ai}. The address area Ad_{ai} has embossed pits. The read/write area RW_{ai} has spiral grooves G and a spiral land L. The spiral grooves G and the spiral land L are wobbling at a predetermined frequency. The wobbling is used as synchronization data.

As shown in FIG. 2, the read/write area RW_{ai} are grouped, forming n + 1 zones Z_0 to Z_n arranged from the innermost track to the outermost rack. In the innermost zone Z_0, each segment Sg_i has 420 wobble waves. Hence, 3360 wobble waves exist in the innermost track. The grooves G in the innermost zone Z_0 are, of course,

wobbling. In the second innermost zone Z_i, each segment Sg_i has 426 wobble waves, six more waves than in the innermost zone Z_0. Thus, 3408 wobble waves exist in the second innermost track. Similarly, each segment of any zone has six more waves than each zone of the immediately inner zone, and each zone has 48 more waves than the immediately outer zone. The wobble frequency at the innermost part of each zone Z_i is the same as that at the innermost part of any other zone. In the outermost zone Z_n, each segment Sg_i has 420 + 6n wobble waves, and 3360 + 48n wobble waves exist in the outermost track.

In each zone Z_i, the address areas Ad_n are arranged in the CAV fashion, that is, in the radial direction of the optical disk 10. In each address area Ada, the address data of the grooves G is written as groove header GH, and the address data of the land L is written as land header LH. The address areas Ada are formed at the same density in the innermost part of each zone Z_i.

How the optical disk apparatus records and reproduces data on and from the optical disk 10 will be now described. To record data on the disk 10, an AV system 21 supplies a record command and an MPEG2 image bit stream to the optical disk apparatus. In the optical disk apparatus, the system controller 13 receives the record command. The system controller 13 acquires the address data from the address DEC TG 14 and controls the servo circuit 18, which performs a seek operation of the OP head 11. More precisely, the servo circuit 18 moves the head 11 to a desired address position on the optical disk 10. Meanwhile, the ECC circuit 17 effects ECC encoding

on the bit stream to be recorded on the optical disk 10. The modem circuit 16 modulates the bit stream thus encoded. The RW circuit 15 performs recording compensation and dives the laser diode LD incorporated in the OP head 11, whereby the bit stream modulated is recorded on the optical disk 10 at the timing designated by the address DEC TG 14.

To reproduce the data from the optical disk 10, the AV system 21 supplies a reproduce command to the system controller 13. The system controller 13 receives address data from the address DEC TG 14 and controls the servo circuit 18, which carries out a seek operation of the OP head 11. The OP head 11 is thereby moved to a desired address position on the optical disk 11. The RW circuit 15 receives a signal reproduced from the OP head 11 and supplies the same to the modem circuit 16. The modem circuit 16 demodulates the signal, thereby reproducing the bit stream. The bit stream reproduced is supplied to the ECC 17. ECC 17 corrects errors in the bit stream and decodes the bit stream, reproducing the image bit stream. The image bit stream, thus reproduced, is supplied to the AV system 21.

In the course of recording data and reproducing data, the wobble circuit 12 detects a wobble signal from the signal supplied from the OP head 11. The wobble circuit 12 generates a sync signal from the wobble signal. The sync signal is supplied to the address DEC TG 14.

When the wobble circuit 12 extracts the wobble signal from the signal read by the OP head 11 and generates the sync signal from the wobble signal, it holds the PLL

circuit (not shown) that generates the sync signal for any part of the wobble signal that has not been normally extracted. FIG. 4 shows the wobble circuit 12 in detail.

As shown in FIG. 4, the wobble circuit 12 comprises a band-pass filter (BPF) 22, a comparator 23, a phase comparator 24, a low-pass filter (LPF) 25, a voltage-controlled oscillator (VCO) 26, and a frequency divider 27. The wobble signal is obtained from a so-called "push-pull (pp) signal." To be more specific, the push-pull signal is made to pass through the BPF 22. A wobble-frequency component, i.e., a wobble signal, is thus extracted from the push-pull signal. The comparator 23 converts the wobble signal to a binary signal. The binary signal is input, as a PLL signal, to the phase comparator 24. The phase comparator 24 compares the PLL signal with a PLL reference signal, generating a phase-difference signal, when a wobble enable signal is set at "H" (high level). While the wobble enable signal remains at "L" (low level), the output of the phase comparator 24 is held. The phase-difference signal is input via the LPF 25 to the VCO 26. The VCO 26 generates a clock signal, the frequency of which accords with the input voltage.

The frequency divider 27 divides the frequency of the clock signal, thus generating a PLL reference signal that has the same frequency as the wobble signal. A phase-locked loop (PLL) is thereby formed, which makes nil the phase difference between the PLL input signal and the PLL reference signal. The clock signal is supplied as a sync signal to the address-decoding timing generator 14. The generator 14 generates a timing signal from the sync signal.

FIG. 5 illustrates how a wobble signal is generated during the data-recording and how a synchronization signal is generated from the wobble signal. In other words, FIG. 5 shows how the optical disk apparatus operates in the recording mode when the write signal is at "H". As shown in FIG. 5, the wobble signal has its waveform distorted when the operating mode changes from the reproducing mode to the recording mode, and vice versa. The waveform of the PLL input signal is distorted, too, as the operating mode is switched. The wobble enable signal is set at "L" when the operating mode changes from the reproducing mode to the recording mode, and vice versa, as is illustrated in FIG. 5. Note that the system controller 13 generates the wobble enable signal.

When the wobble signal is distorted in its waveform, the PLL is held. This prevents the waveform distortion of the wobble signal from influencing the recording of data.

How a wobble signal is generated during the track jump and how a synchronization signal is generated from the wobble signal will be described, with reference to FIG. 6.

As shown in FIG. 6, the push-pull signal is affected by the track jump. The PLL input signal cannot form a binary waveform that wobbles adequately. To generate a sufficiently wobbling signal, the wobble enable signal is set at "L" in the track jump area, as is illustrated in FIG. 6. The PLL is thereby held, thereby preventing the track jump from affecting the push-pull signal.

FIG. 7 shows how a wobble signal is generated from the address data area and how a synchronization signal is generated from the wobble signal.

As shown in FIG. 7, there is no wobble signal in the address data area. The PLL input signal is inevitably influenced in the address data area. To prevent the PLL input signal from being influenced, the wobble enable signal is set at "L" in the address data area as is illustrated in FIG. 7. The PLL is thereby held, thus preventing the PLL input signal from being influenced in the address data area.

FIG. 8 shows another type of a wobble circuit 12, which generates a synchronization signal from a wobble signal.

The wobble signal is generated from the push-pull (pp) signal. More specifically, the push-pull signal is made to pass through the band-pass filter (BPF) 22. The BPF 22 extracts a wobble-frequency component from the push-pull signal, thus generating a wobble signal. The comparator 23 converts the wobble signal to a binary signal. The binary signal is input to the gate 28, to which a wobble enable signal is input, too. When the wobble enable signal is at "H", the gate 28 outputs the binary signal. The gate 28 does not output the binary signal when the wobble enable signal is at "L". The signal output from the gate 28 is the PLL input signal that is input to the phase comparator 29. The phase comparator 29 compares the PLL input signal with a PLL reference signal in terms of phase, generating a phase-difference signal. The phase-difference signal is input via the LPF 25 to the VCO 26. The VCO 26 generates a clock signal, the frequency of which accords with the input voltage.

The frequency divider 27 divides the frequency of the clock signal, thus generating a PLL reference signal that has the same frequency as the wobble signal. The phase comparator 29 is, for example, an exclusive OR (EOR) circuit, forming a phase-locked loop (PLL) that provides a phase difference of 90° between the PLL input signal and the PLL reference signal. Even if no PLL input signal is supplied to the phase comparator 29, the output of the comparator 29 passes through the LPF 25 and reduces to nil. The PLL is thereby held. The clock signal, i.e., the output of the VCO 26, is used as a sync signal to generate a timing signal.

FIG. 9 explains how the wobble circuit of FIG. 8 generates a wobble signal and how a synchronization signal is generated from the wobble signal.

More precisely, FIG. 9 illustrates the recording mode the apparatus takes when the write signal is at "H". As shown in FIG. 9, the wobble signal is distorted in waveform when the operating mode is switched from the reproducing mode to the recording mode. The wobble enable signal is therefore set at low level when the mode is switched from the reproducing mode to the recording mode and when the mode is switched from the recording mode to the reproducing mode. As shown in FIG. 9, the PLL input signal is at low level, while the wobble enable signal remains at "L", thus holding the PLL. This prevents the PLL input signal from being influenced by the waveform distortion of the wobble signal, which occurs in the recording mode.

WHAT IS CLAIMED IS:

1. A recording/reproducing apparatus for recording and reproducing data on and from a disk-shaped recording medium that has an address data area having emboss pits and a recording/reproducing area having a wobbling spiral groove, said apparatus comprising:

head means for reading address data from the address data area and writing and reading a signal in and from the recording/reproducing area; and

wobble-signal processing means for extracting a wobble signal from the signal the head means has read from the recording/reproducing area, and for holding a PLL circuit designed to reproduce a sync signal from the wobble signal, while no normal wobble signal is obtained.

2. The recording/reproducing apparatus according to claim 1, wherein the wobble-signal processing means holds the PLL circuit in accordance with a pulse that switches the operating mode from reproducing mode to recording mode.

3. The recording/reproducing apparatus according to claim 1, wherein the wobble-signal processing means holds the PLL circuit in accordance with a pulse that switches the operating mode from recording mode to reproducing mode.

4. The recording/reproducing apparatus according to claim 1, wherein the wobble-signal processing means holds the PLL circuit in accordance with a track-jump pulse that effects a track jump.

5. The recording/reproducing apparatus according to claim 2, wherein the

wobble-signal processing means holds the PLL circuit in accordance with an address-area pulse while the head means is reading the address data from the address data area.

6. A recording/reproducing method of recording and reproducing data on and from a disk-shaped recording medium that has an address data area having emboss pits and a recording/reproducing area having a wobbling spiral groove, said method comprising the steps of:

extracting a wobble signal from a signal head means has read from the recording/reproducing area; and

holding a PLL circuit designed to reproduce a sync signal from the wobble signal, while no normal wobble signal is obtained.

ABSTRACT OF THE DISCLOSURE

A recording/reproducing apparatus comprising an OP head 11, a wobble circuit 12, a system controller 13, and an address-decoding timing generator 14. The wobble circuit 12 extracts a wobble signal from the signal the OP head 11 has read. A PLL circuit for generating a sync signal from the wobble signal is held while no normal wobble signal is generated. The address-decoding timing generator (Address DEC TG) 14 receives a signal the OP head 11 has reproduced, decodes the address represented by the signal, and supplies the address data to the system controller 13. The generator 14 also generates a timing signal from the sync signal supplied from the wobble circuit 12 and supplies the timing signal to the other components of the recording/reproducing apparatus.

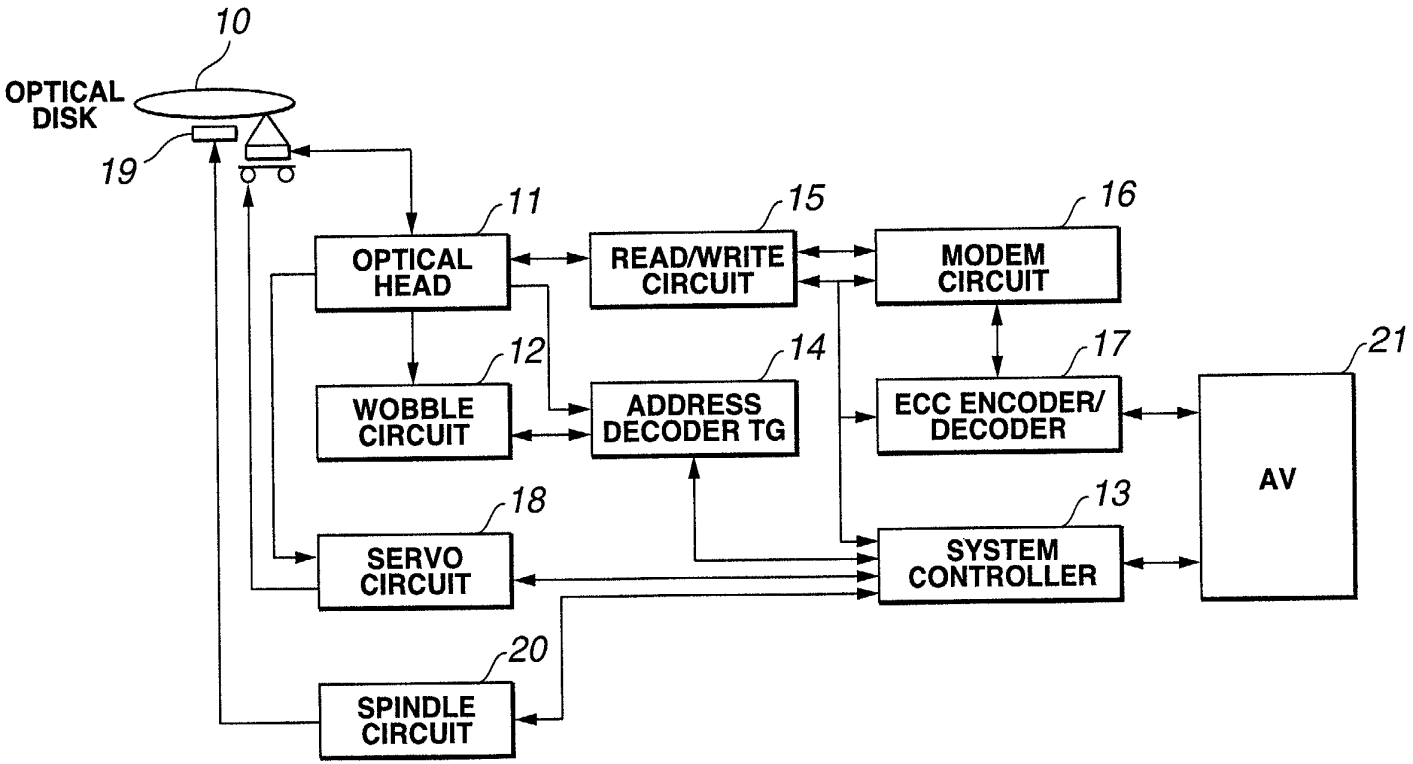
10
OPTICAL DISK
19
11
OPTICAL HEAD
15
READ/WRITE CIRCUIT
16
MODEM CIRCUIT
12
WOBBLE CIRCUIT
14
ADDRESS DECODER TG
17
ECC ENCODER/ DECODER
21
AV
18
SERVO CIRCUIT
13
SYSTEM CONTROLLER
20
SPINDLE CIRCUIT

FIG.1

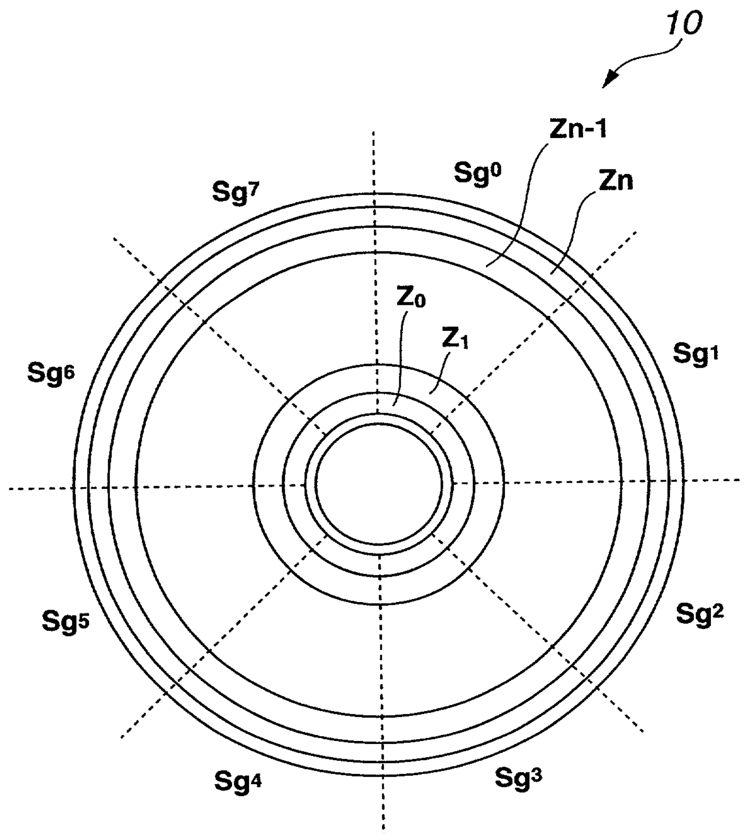

FIG.2

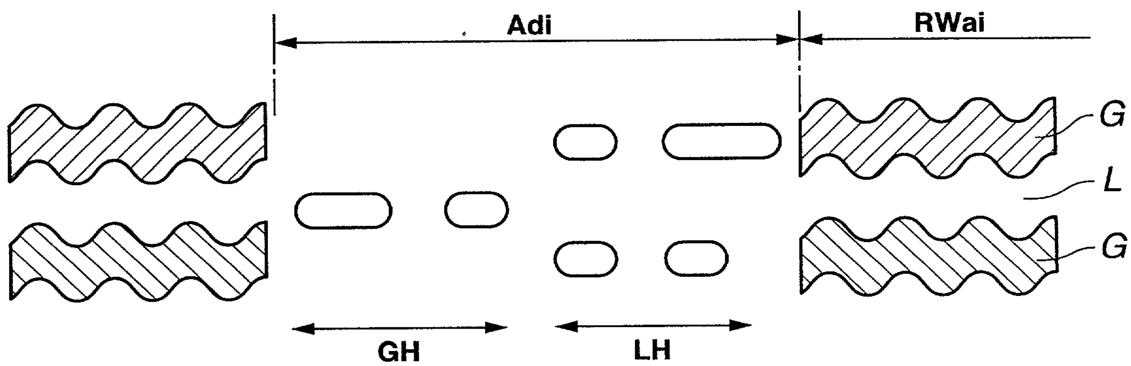

FIG.3

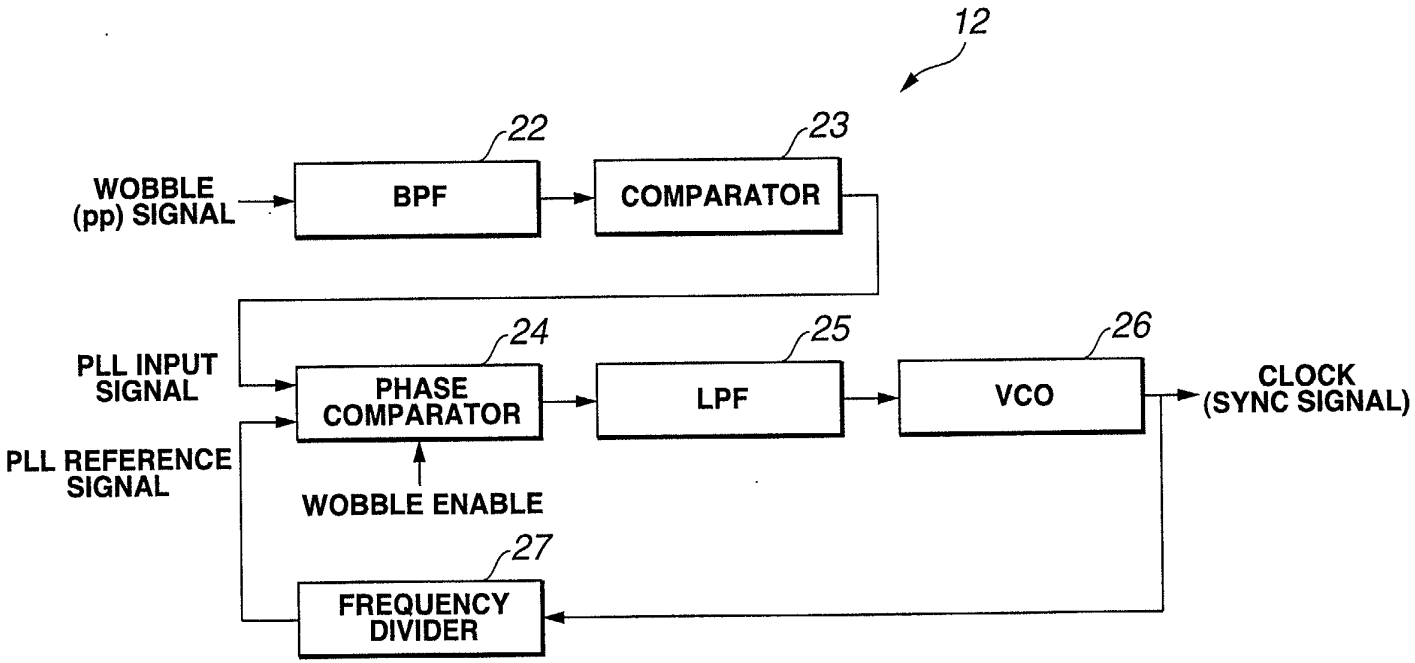
12
22
23
WOBBLE
(pp) SIGNAL
BPF
COMPARATOR
24
25
26
PLL INPUT
SIGNAL
PHASE
COMPARATOR
LPF
VCO
CLOCK
(SYNC SIGNAL)
PLL REFERENCE
SIGNAL
WOBBLE ENABLE
27
FREQUENCY
DIVIDER

FIG.4

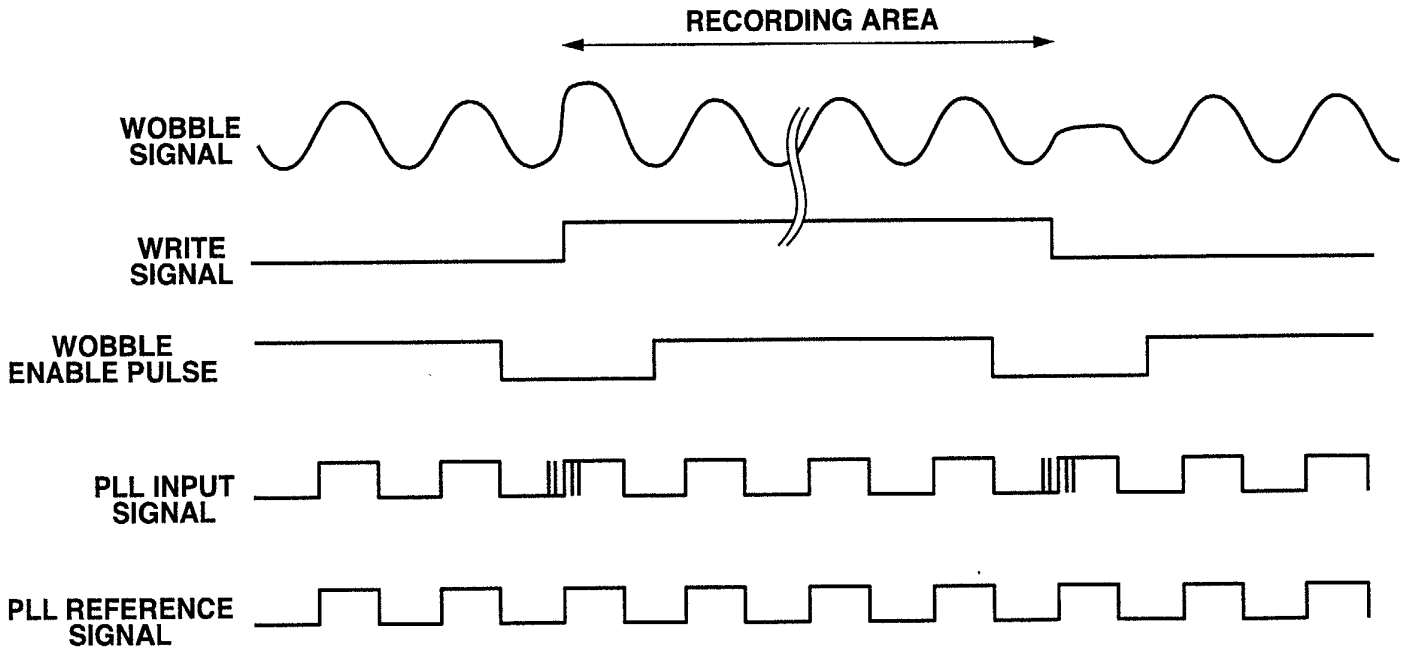
RECORDING AREA
WOBBLE SIGNAL
WRITE SIGNAL
WOBBLE ENABLE PULSE
PLL INPUT SIGNAL
PLL REFERENCE SIGNAL

FIG.5

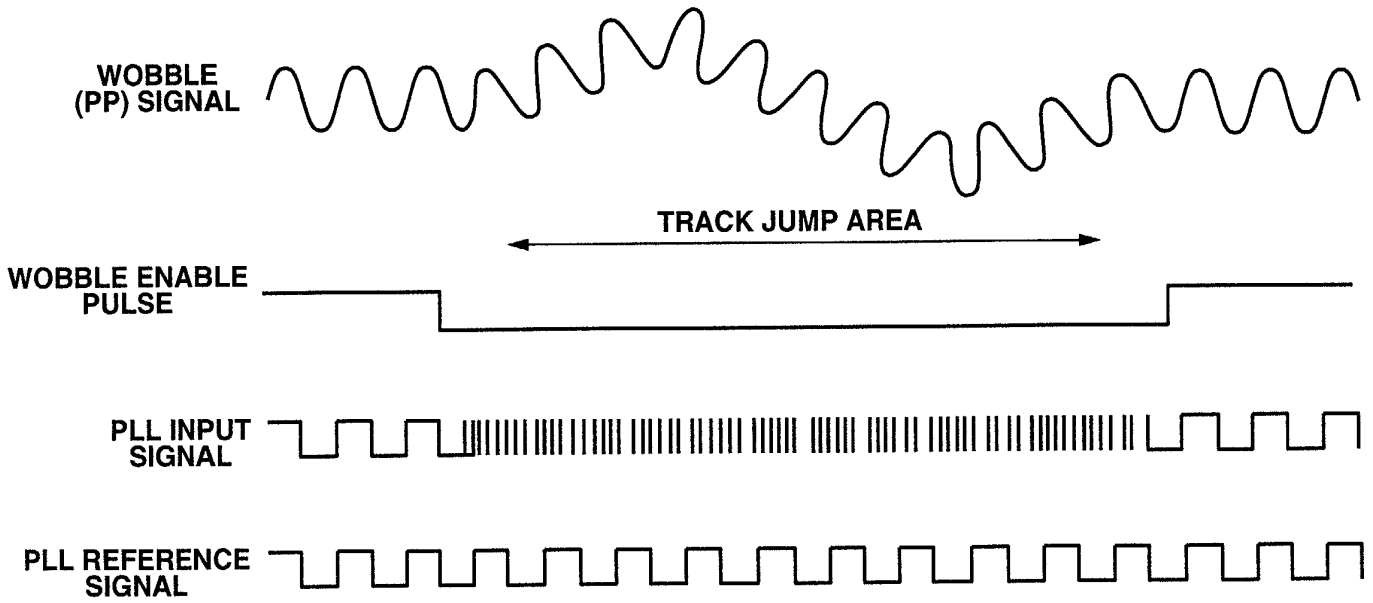
WOBBLE
(PP) SIGNAL
TRACK JUMP AREA
WOBBLE ENABLE
PULSE
PLL INPUT
SIGNAL
PLL REFERENCE
SIGNAL

FIG.6

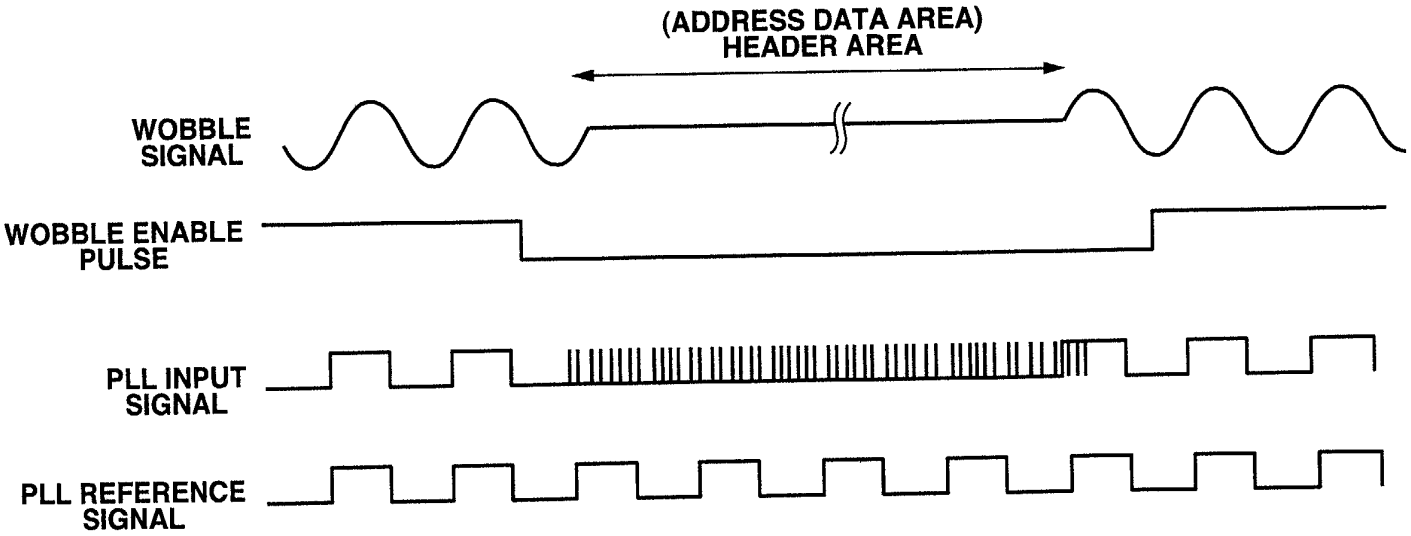
(ADDRESS DATA AREA)
HEADER AREA
WOBBLE SIGNAL
WOBBLE ENABLE PULSE
PLL INPUT SIGNAL
PLL REFERENCE SIGNAL

FIG.7

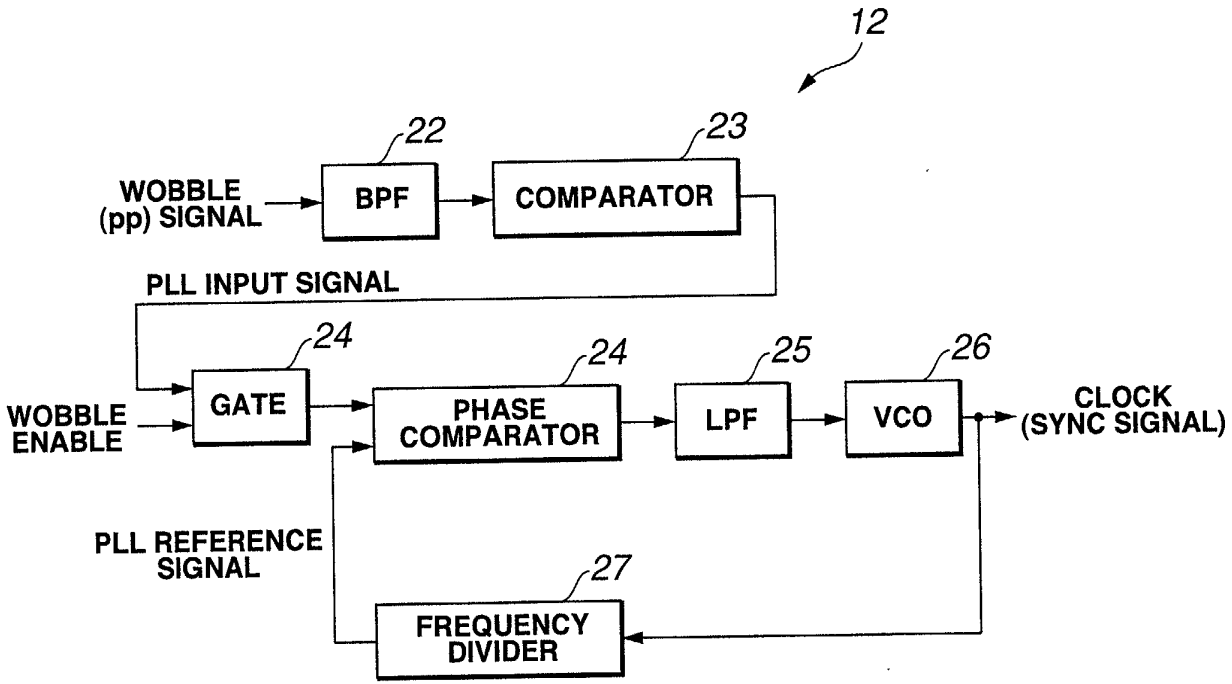
12
22
23
WOBBLE
(pp) SIGNAL
BPF
COMPARATOR
PLL INPUT SIGNAL
24
24
25
26
WOBBLE
ENABLE
GATE
PHASE
COMPARATOR
LPF
VCO
CLOCK
(SYNC SIGNAL)
PLL REFERENCE
SIGNAL
27
FREQUENCY
DIVIDER

FIG.8

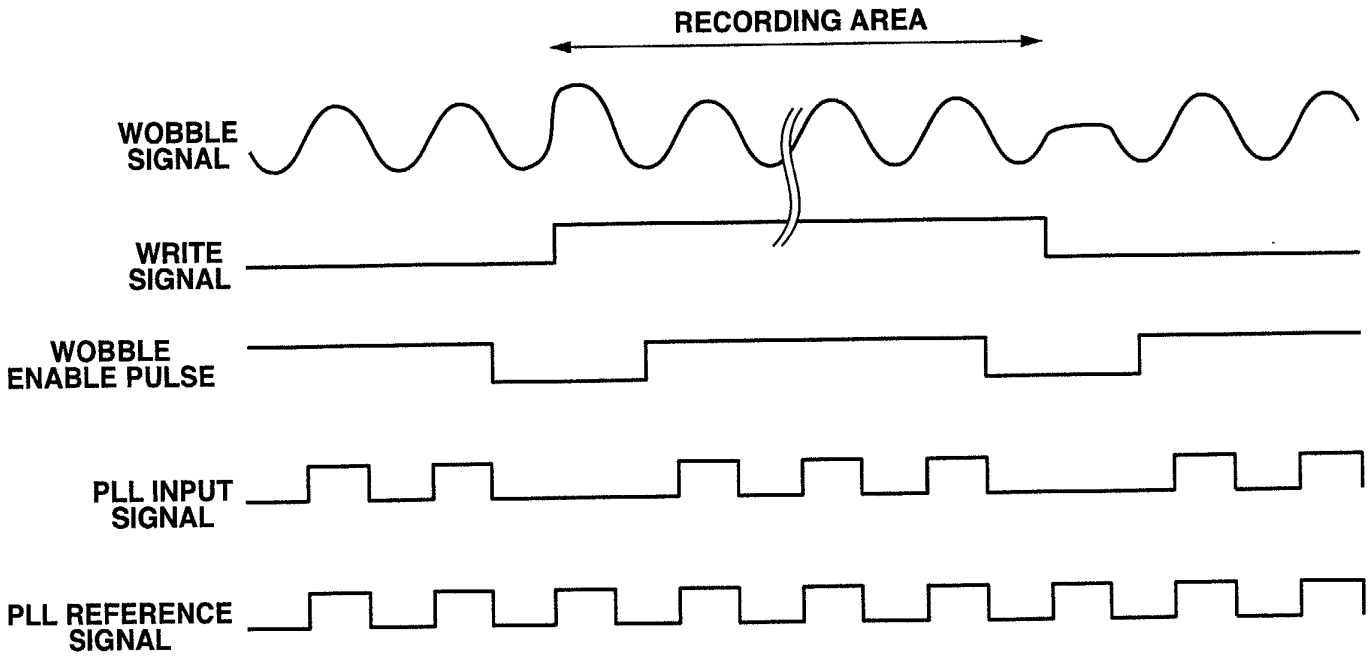
RECORDING AREA
WOBBLE SIGNAL
WRITE SIGNAL
WOBBLE ENABLE PULSE
PLL INPUT SIGNAL
PLL REFERENCE SIGNAL

FIG.9

SONY-U0266 BY EXPRESS MAIL NO. EL254113540US

Declaration and Power of Attorney For Patent Application
特許出願宣言書及び委任状

Japanese Language Declaration
日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。	As a below named inventor, I hereby declare that:
私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。	My residence, post office address and citizenship are as stated next to my name.
下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。 _____ _____	I believe I am the original, first and sole inventor (if only one named is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled. RECORDING/REPRODUCING APPARATUS AND RECORDING/REPRODUCING METHOD
上記発明の明細書（下記の欄でx印がついていない場合は、本書に添付）は、 ☐ __月__日に提出され、米国出願番号または特許協定条約国際出願番号を_____とし、 （該当する場合）_____ に訂正されました。	the specification of which is attached hereto unless the following box is checked: ☐ was filed on ____ as United States Application Number or PCT International Application Number ____ and was amended on _____ (if applicable).
私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。	I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.
私は、連邦規則法典第３７編第１条５６項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。	I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.
私は、米国法典第３５編１１９条(a)-(d)項又は３６５条(b)項に基き下記の、米国以外の国の少なくとも一ヵ国を指定している特許協力条約３６５(a)項に基ずく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。	I hereby claim foreign priority under Title 35, United States Code, Section 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.
Prior Foreign Application(s) 外国での先行出願 P11-298301 (Number) （番号）　Japan (Country) （国名）	Priority Not Claimed 優先権主張なし 20 October 1999 (Day/Month/Year Filed) （出願年月日）　☐

Japanese Language Declaration
日本語宣言書

(Number) (番号)	(Country) (国名)	(Day/Month/Year Filed) (出願年月日)

私は、第３５編米国法典１１９条(e)項に基いて下記の米国特許出願規定に記載された権利をここに主張いたします。	I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.
(Application No.) (出願番号) (Filing Date) (出願日)	(Application No.) (出願番号 (Filing Date) (出願日)
私は、下記の米国法典第３５編１２０条に基いて下記の米国特許出願に記載された権利、又は米国を指定している特許協力条約３６５条(c)に基ずく権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第３５編１１２条第１項又は特許協力条約で規定された方法で先行する米国特許出願に開示されていない限り、その先行米国出願書提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第３７編１条５６項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。	I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.
(Application No.) (出願番号) (Filing Date) (出願日)	(Status: Patented, Pending, Abandoned) (現況：特許許可済、係属中、放棄済)
(Application No.) (出願番号) (Filing Date) (出願日)	(Status: Patented, Pending, Abandoned) (現況：特許許可済、係属中、放棄済)
私は、私自身の知識に基ずいて本宣言書中で私が行なう表明が真実であり、かつ私の入手した情報と私の信じるところに基ずく表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第１８編第１００１条に基ずき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行なえば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。	I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may be jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration
日本語宣言書

委任状： 私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。（弁護士、または代理人の氏名及び登録番号を明記のこと）	POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark office connected therewith (*list name and registration number*)

Karl A. Limbach	18,689	Alfred A Equitz	30,922	Charles L Hamilton	42,624
George C Limbach	19,305	Charles P Sammut	28,901	Andrew V Smith	43,132
John K. Uilkema	20,282	Mark C. Pickering	36,239	Eric N Hoover	37,355
Neil A. Smith	25,441	Patricia Coleman James	37,155	Frank J Mycroft	46,946
Veronica C Devitt	29,375	Kathleen A Frost	37,326	Robert M McConnell	46,912
Ronald L. Yin	27,607	Alan A Limbach	39,749	J. Thomas McCarthy	22,420
Gerald T. Sekimura	30,103	Douglas C Limbach	35,249	Joel G Ackerman	24,307
Michael A. Stallman	29,444	Seong-Kun Oh*		Roger S. Sampson	44,314
Philip A. Girard	28,848	Kyla L. Harriel	41,815	Susan M Schmitt	34,427
Michael J Pollock	29,098	Mayumi Maeda	40,075	Edward B Weller	37,468
Steven M Everett	30,050	* Recognition under 37 CFR 10.9(b)			

書類送付先	Send Correspondence to: **Charles P. Sammut, Esq.** **Limbach & Limbach L.L.P.** **2001 Ferry Building** **San Francisco, CA 94111-4262**
直接電話連絡先： （名前及び電話番号）	Direct Telephone Calls to: (*name and telephone number*) **Charles P. Sammut** **(415) 433-4150**
唯一または第一発明者名	Full name of sole or first inventor: SHOEI KOBAYASHI
発明者の署名 日付	Inventor's signature Date
住所	Residence Kanagawa, Japan
国籍	Citizenship Japan
私書箱	Post Office Address c/o SONY CORPORATION 7-35, Kitashinagawa 6-chome Shinagawa-ku, Tokyo, 141-0001 JAPAN

Japanese Language Declaration 日本語宣言書	
第二共同発明者	Full name of second joint inventor, if any TADAAKI NOMOTO
第二共同発明者　　日付	Second inventor's signature　　Date
住所	Residence Tokyo, Japan
国籍	Citizenship Japan
私書箱	Post Office Address c/o SONY CORPORATION 7-35, Kitashinagawa 6-chome Shinagawa-ku, Tokyo, 141-0001 JAPAN